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ABSTRACT

This study documents the kinds of planning that teachers engage in before a lesson begins and identifies differences in planning procedures between teachers. The subjects were 40 second- and fifth-grade teachers in California including 20 teachers with high average pupil gain scores and 20 teachers with low average pupil gain scores. The teachers were provided with special curriculum materials for one lesson in reading and one in mathematics and were asked to adapt these materials for use in their own classrooms. Each teacher planned and conducted a 20-minute lesson in each subject area. Patterns of similarities and differences in response to the lesson planning task were identified. Teachers varied in specificity, format, and types of information included in written plans, used behavioral goals rarely, made more specific than general statements, and referred frequently to cognitive aspects of the lesson. No teachers mentioned seating arrangements, though it was obvious from observation of their lessons that seating arrangements were a planned aspect of most lessons. Comparative data on seating arrangements indicates some significant differences between teachers with high and low pupil gain scores--teachers with low pupil gain scores showed a tendency to be inattentive to the appropriateness or comfort of physical arrangements of their pupils. Teachers with high pupil gain scores showed a greater attention to cognitive aspects of lessons and were the only ones to develop original behavioral objectives; teachers with low pupil gain scores tended to think in generalities rather than specifics. (MM)

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What's In A Plan?

stated and unstated plans for lessons

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Data for this study were collected as part of Special Study C of the Beginning Teacher Evaluation Study for the California Commission for Teacher Preparation and Licensing. The data on written lesson plans were analyzed and reported as part of that study. The analysis of unstated plans was not funded by the Commission and has not been previously reported.

This paper will report on one aspect of a more complex study of teacher planning which was part of the Beginning Teacher Evaluation Study funded by the California State Commission on Teacher Preparation and Licensing, and conducted by staff at the Far West Laboratory. The teacher planning study was one of several special studies designed to generate new and promising variables for research on teaching effectiveness. Information was gathered on teachers' planning for daily lessons and on diagnostic activities related to daily lesson plans.

Objectives

The major goal of the study to be reported was to document in a preliminary way the kinds of planning that teachers engage in before a lesson begins. Although teacher planning would seem to be an important aspect of effective teaching, the literature review indicated that very little emirical research has been conducted on the actual daily planning of teachers. The basic questions asked in this study were:

> What types of things do teachers make notes about when planning for a particular lesson? How extensive are their notes?
>
> Can teachers be differentiated on this basis? If so, are these differences related to teacher differences in average pupil gain scores?
>
> What new research variables are suggested by this information about teacher planning?

Perspective

The problem of gathering and analyzing data about teacher planning was approached from the perspective of research on information-processing. The research conducted by and summarized by Schroder, Karlines, and Phares

suggests that teachers may vary in the amount and types of information that they extract from the environment to apply to instructional decisions (information input). In this study of teachers' written plans, the plans were analyzed to determine what amounts and types of information were recorded as instructional decisions (information output).

Data Source

The subjects of the study were forty elementary school teachers in five geographic regions of California. These teachers formed a "known sample" selected from a group of two hundred volunteers to provide differences in teacher effectiveness as measured by average pupil gain scores in special two-week Experimental Teaching Units in reading and mathematics. The forty subjects included twenty (ten second grade and ten fifth grade) teachers with high average pupil gain scores, and twenty (ten second grade and ten fifth grade) teachers with low average pupil gain scores.

The selection of the "known sample" of teachers was the result of an earlier study. Data collectors and analysts in this study of teacher planning had no knowledge of the subjects' ranking with regard to pupil gain scores until the final stages of data analysis.

Methods and Techniques

The forty teachers were provided special curriculum materials for one lesson in reading and one in mathematics, and were asked to adapt these materials to make them appropriate for a lesson for children in their own classrooms. Each teacher was asked to plan and conduct a twenty minute lesson in each subject area, teaching a group of twelve pupils from their class. The pupils were selected by the research team to form a stratified random sample

of pupils in the classroom, based on reading achievement socres.

The lessons were observed and videotaped by a research assistant, who also drew up seating charts, recording the physical arrangement of pupils for the particular lesson. After each lesson teachers' written plans were collected and they were interviewed about the lesson they had just taught. At this time data were also collected for a companion study on teacher and pupil perceptions of classroom interaction.

Teachers' written plans were coded according to a basic category system (see Table 1) developed to reflect teacher and pupil responses to a series of tasks that were included in the two companion studies (teacher planning and teacher-pupil perceptions). Special attention was paid to teacher selection and statement of objectives, because of the focus on use of behavioral objectives in recent years. Attention was also given to aspects of instruction which pupils had commented on frequently when they were interviewed as part of the companion study. In this paper particular attention will also be given to the types of seating arrangements that teachers set up for these lessons.

The coded lesson plans were analyzed to focus on: specificity of plans; general format of plans; types and sources of goal statements; diagnosis of pupil preparation for the lesson; identification of evaluation procedures; frequency of reference to various categories in the basic category system; and planning (or lack of planning) for specific aspects of instructional process mentioned frequently by pupils.

Patterns of teacher similarities and differences in response to the lesson planning task were identified. These patterns were compared to teacher groupings based on grade level and on average pupil gain scores to determine whether any relationships existed. Statistical tests of significance included two-tailed t tests and tests for contingency tables. The probability level of

Table 1

Basic Category System

A Comparison of Category Use in Relation to Various Tasks

	Teacher Judgment	Stimulated Recall	Pupil Concepts of Teaching	Lesson Plans
General Approach				
A. Goals	x	x	o	x
B. Instructional Strategy	x	x	x	o
C. Sequence of Procedures	x	x	o	x
D. Teacher vs. Pupil Structure	x	x	x	o
E. Teacher Activity	x	x	x	x
F. Pupil Activity	x	x	x	x
G. Management/Control	x	x	x	o
H. Seating Arrangement	x	x	o	x
I. Size, Composition of Group	x	x	x	x
J. Pupil Outcomes	o	o	o	x
K. Teacher Style	x	x	o	o
II. Materials				
A. Preparation of Materials	x	o	x	o
B. Type of Materials	x	x	x	x
C. Teacher Use of Materials	x	x	x	x
D. Pupil Use of Materials	x	x	x	x
III. Cognitive Aspects				
A. Teacher Introduction	x	x	x	x
B. Teacher Directions	o	x	x	x
C. Teacher Questioning	x	x	x	x
D. Teacher Selection of Pupils for Discussion	o	x	x	x
E. Teacher Wait for Response	x	x	x	o
F. Teacher Explanation	x	x	x	x
G. Teacher Response to Right/ Wrong Answers	x	x	x	o
H. Teacher Summary and Review of Lesson	o	x	x	x
I. Vocabulary	x	x	x	x
J. Content Focus	x	x	x	x
K. Data (selection, organization, amount)	x	x	x	x
L. Pacing/Time	o	x	x	x
M. Pupil Ability	x	x	x	x
N. Pupil Background, Preparation, Needs	o	x	o	x
O. Pupil Ideas	o	x	o	x
P. Pupil Learning	o	x	x	o
IV. Affective Aspects				
A. Teacher Enthusiasm	x	o	x	o
B. Teacher Attitude Toward Pupils	x	x	x	o
C. Teacher Use of Positive Reinforcement	o	x	x	x
D. Teacher Language	o	x	o	o
E. Pupil Participation/Attention	x	x	x	x
F. Pupil Behavior	o	x	x	o
G. Pupil Feelings	o	x	o	x
H. Teacher Image	o	x	o	o
V. Physical Aspects				
A. Pupil Comfort	o	x	o	o
B. Teacher/Pupil Movement	x	x	x	x
C. Teacher/Pupil Proximity	x	o	o	o
D. Visual/Auditory	x	x	x	o
E. Classroom as a Whole	x	o	x	o
F. Non-verbal Communication	o	x	o	o

.10 was used to reject the null hypothesis of no difference between groups. Because the study was designed to identify variables and relationships that might be productive for future research, tests of statistical significance were supplemented by attention to the practical utility of differences noted.

The Stated Plans of Teachers

Most of the forty teachers wrote lesson plans as requested, and submitted them to the interviewer at the end of each lesson. There were a few exceptions. One teacher tape-recorded a description of his plans for each lesson. Another simply wrote several notes on the instruction sheets that had been given to teachers. A third mailed in both lesson plans two weeks after the lessons had been taught, indicating that he had thought them through beforehand, but had not had time to write them up until after the lesson. Two second grade teachers did not provide any lesson plans at all. They also said that they would mail plans in after the lesson, but neither of them did.

Descriptive data. Two-thirds of the teachers stated in their follow-up notes or comments on their lesson plans that the plans they wrote for these lessons were much more detailed than usual. They indicated that most of their regular planning was done in their heads rather than on paper. One-third of the teachers indicated that they generally did write plans out with slightly less or roughly the same amount of detail. Teachers were almost unamious, however, in their assertion that student teachers should do detailed written planning. They felt that careful prethinking about a lesson was essential for a novice teacher.

In general the teachers wrote moderately specific lesson plans, though several teachers' plans were vague, and some of them were quite detailed. A vague plan was one which sketched in activities very briefly, such as

"Talk about expanding sentences. Hand out worksheets. Check for problems." A specific plan was one which gave information such as specific examples to be given or specific questions to be asked. A detailed plan was one which contained elements such as word-for-word statements that the teacher expected to make, indications of expected pupil responses to questions, diagrams of the way information would be arranged on the chalkboard, and so forth. As is evident in Table 2, there was no difference in specificity of plans from one type of subject matter to another. Fifth grade teachers tended to write more detailed plans than second grade teachers in both reading and math.

Table 2 also indicates that the outline was the most popular format by far, although several teachers wrote narrative descriptions of their planned lessons, and a few went so far as to write "scripts," noting the exact verbal interchanges that they planned to have with pupils during the lesson. There was little difference in preferred format from one grade level to another or from one subject matter to another. Most teachers used the same format for both of their lessons. Three second and three fifth grade teachers varied the format used, and in all but one case provided a more detailed lesson plan in math than in reading.

Some interesting differences appear with regard to statements of goals. The curriculum materials provided to the teachers gave some possible objectives for the lessons to be taught, and teachers were instructed that they could select from these objectives or formulate objectives of their own. This procedure was chosen because it seemed to be similar to the realistic situation teachers face when using prepared curriculum materials. The types of optional goals provided to the teacher varied in the two lessons, however. In the materials for the reading lesson, but behavioral and non-behavioral statements of goals were given. In the materials for the math lesson, only non-behavioral goals were given. In planning both lessons, teachers stated non-behavioral

Table 2

Lesson Planning Task

Frequency of Use of Various Planning Procedures

	Reading		Math	
	2nd (N=18)	5th (N=20)	2nd (N=18)	5th (N=20)
Specificity of Written Plans				
Vague	5	5	5	5
Specific	10	9	10	9
Detailed	3	6	3	6
General Format of Plans				
Outline	13	15	10	15
Narrative	4	3	5	3
Script	1	0	3	1
Extremely Sketchy	0	2	0	1
Statement of Goals				
Behavioral	7	5	1	1
Non-Behavioral	8	8	14	13
Not Stated	3	7	3	6
Source of Goal Statements				
Accepted/Selected	4	5	7	8
Restated	9	2	5	0
Developed Original	2	6	3	6
Not Stated	3	7	3	6
Attention to Pupil Background, Preparation				
Notes	1	5	3	3
Does Not	17	15	15	17
Identification of Evaluation Procedures				
Notes	2	4	2	4
Does Not	16	16	16	16
Indication of Possible Alternative Procedures				
Notes	4	5	5	6
Does Not	14	15	13	14

goals more frequently than behavioral goals, but the preponderance of non-behavioral goals was much more marked in the math lesson (see Table 2), which suggests that the type of directions provided in curriculum materials does have some effect on the way teachers formulate their lesson plans. This pattern held for both second and fifth grade teachers.

Interestingly enough, the teachers did not merely select from among the optional goals provided in most cases, though they tended to do this more frequently in the math lessons than the reading lesson. The tendency to restate goals in their own words or develop original goals that were rather different than those provided was particularly strong in second grade teachers in the reading lesson.

It is instructive also to note the types of original goals that were stated. For second grade reading lessons, the two original goal statements were both non-behavioral. For fifth grade reading lessons, the six original goals included two behavioral and four non-behavioral statements. The second grade math lessons included three original goal statements, one behavioral and two non-behavioral. The six original goal statements in fifth grade math lessons included only one behavioral objective.

One grade level difference that appears in relation to goal statements is that fifth grade teachers were more apt to write lesson plans without stating any goals at all than were second grade teachers. This was the case in both reading and math lessons. Five fifth grade teachers stated no goals for either lesson, while three of them stated goals for only one of the two lessons. Two second grade teachers skipped statements of goals for both lessons, and two others provided them for only one lesson.

In general, teachers paid little attention in their written plans to diagnosis of pupil needs in relation to the topic to be taught, or to the evaluation procedures to be used to determine the amount of learning occurring as a result of the lessons (see Table 2). It may well be that since these lessons were "one-shot" affairs inserted into the on-going curriculum, teachers devoted less thought than normal to these aspects of lesson planning. Or it may be that these aspects are more difficult to get out of teacher' heads and on to paper. It is also possible, of course, that teachers really do not devote much attention to these aspects of instruction in their daily plans. In a current study we are examining teacher planning of normal daily lessons in an attempt to answer part of this question.

Some teachers did make note of alternative procedures in writing their lesson plans, though the majority did not. Again, this may indicate one of the difficulties of working with written plans. In follow-up interviews, the majority of teachers indicated that they had considered various alternative procedures in planning their lessons before settling on one procedure (twelve second grade teachers and sixteen fifth grade teachers mentioned such alternatives). It would make sense to believe that at least some of these alternatives, once considered, remained in teachers' minds as options to be called upon during the lesson, if necessary. But these possibilities were rarely noted in the written plans.

Another perspective on lesson plans involves the types of statements used to describe the projected lesson. Statements were categorized according to the basic category system, and were also coded as "general or "specific." As is noted in Table 3, teachers tended to made more specific statements than general statements. (An example of a general statement in relation to Data Selection would be: do an example of each of the following lattice

Table 3

Lesson Planning Task

Mean Numbers of Various Categories of Statements Included in Lesson Plans

	Reading		Math	
	2nd (N=18)	5th (N=20)	2nd (N=18)	5th (N=20)
No. of General Statements	2.83	2.55	2.83	2.70
No. of Specific Statements	5.61	5.15	4.72	5.40
No. of References to General Approach	3.00	2.50	2.55	2.40
No. of References to Materials	1.83	1.45	2.00	2.10
No. of References to Cognitive Aspects	3.22	3.30	2.83	3.35
No. of References to Affective Aspects	.38	.20	.11	.15
No. of References to Pupil Categories	2.72	2.10	2.00	2.00
No. of References to Process Categories	2.33	2.95	2.72	3.35

problems - one arrow, two arrow, opposite arrows. An example of a specific statement would be: try problems -20↑ = (10); 3↗ = (14); 3→→ = (5); 16 ↑↓ = (16); etc. A vague statement such as "do some problems," would not be coded as Data Selection at all since there would be no indication of the data to be used.)

For both grade levels and for both lessons teachers tended to make most of their statements about cognitive aspects of the lesson with references to general approach maintaining a close second. More mention of materials was made in planning for the math lesson than the reading lesson. Statements about affective aspects of the lessons were minimal throughout. With the exception of second grade reading lessons, teachers made more statements referring to instructional process than to pupils though the differences between the means of these types of statements was not very large.

Because of the pupil attention to cognitive aspects of the lessons that was revealed in the Pupil Concepts of Teaching Task in the study of teacher and pupil perception of classroom interaction, particular attention was paid to specific categories of statements in teachers' lesson plans that referred to cognitive aspects of the lesson. The results of this analysis are presented in Table 4. In general, most teachers did not make specific mention in their plans of aspects of the lesson that were apparently relevant to pupils, such as Teacher Explanation, Teacher Directions, and Data Selection. Teacher Introduction and Teacher Questioning, which were not noted as frequently by pupils, received more attention by teachers in their lesson plans than did Teacher Explanation and Teacher Directions. Data Selection received more attention than many other categories, of course, and fifth grade teachers made somewhat more frequent

Table 4

Lesson Planning Task

Frequency of Use of Specific Statements
Related to Various Categories of Cognitive Aspects of
Instructional Process

	Reading		Math	
	2nd (N=18)	5th (N=20)	2nd (N=18)	5th (N=20)
Teacher Introduction				
Specific Mention	7	4	2	5
No Specific Mention	11	16	16	15
Teacher Explanation				
Specific Mention	0	2	0	7
No Specific Mention	18	18	18	13
Teacher Directions				
Specific Mention	2	2	3	3
No Specific Mention	16	18	15	17
Teacher Questions				
Specific Mention	5	5	5	5
No Specific Mention	13	15	13	15
Data Selection/Organization				
Specific Mention	7	11	6	8
No Specific Mention	11	9	12	12
Use of Pupil Ideas				
Specific Mention	16	12	8	9
No Specific Mention	2	8	10	11
Content Focus				
Specific Mention	6	4	6	5
No Specific Mention	12	16	12	15
Teacher Summary and Review				
Specific Mention	1	1	2	1
No Specific Mention	17	19	16	19
Inclusion of Worksheets Prepared by Teacher				
Included	6	12	11	12
Not included	12	8	7	8

specific references to Data Selection than did second grade teachers. Two categories of importance to pupils received no mention in teachers' lesson plans, but these categories (Teacher Response to Right/Wrong Answers and Teacher Selection of Pupils for Discussion) are highly interaction-oriented, so it is not terribly surprising that teachers would not refer to them in outlining procedures for a lesson.

The highest frequency of specific statements related to cognitive categories is in reference to plans for the use of pupil ideas within the lesson. It is interesting to note that there are more specific plans for use of pupil ideas in reading than in math lessons, and that second grade teachers mention this aspect in their reading plans more frequently than fifth grade teachers.

More common than any reference to particular cognitive aspects of the instructional process was teachers' tendency to include worksheets that they had prepared for pupils to use during the lesson. In planning reading lessons, fifth grade teachers developed these worksheets much more frequently than second grade teachers. In planning math lessons, both second and fifth grade teachers showed an inclination to include worksheets in their plans. Preparation of such a worksheet is one way in which teachers can specify the data to be provided, the questions to be asked, and the activities in which pupils will be engaged. For some teachers it may even be a substitute for identification of behavioral objectives or content focus.

This tendency to construct worksheets when preparing to teach from relatively unfamiliar curriculum materials poses some interesting questions. The use of workbooks by teachers has been criticized in many quarters as a way of providing children with busy work, and cutting down the preparation time teachers must themselves engage in, without providing any increased

effectiveness of instruction. In the short lessons taught by the forty teachers in this study, there was no need to provide busy work, for each teacher was only working with a group of twelve pupils. And teacher preparation time must be increased by the "production" of worksheets which they must develop entirely on their own, as was the case in this instance. Apparently worksheets function in some other capacity for these teachers. It might be helpful to know what role this particular type of preparation plays in teachers' preplanning and prethinking about a lesson.

The one type of response to the lesson planning task which was almost standard for all teachers was that of specifying a sequence of procedures to be followed. As noted in Table 5, almost all teachers wrote their plans within a framework which included writing things down in the order in which they were expected to occur. This may not seem at all startling to the reader. After all, lesson plans are a guide to be followed. It certainly makes logical sense that they would identify steps that are to be followed in the order in which they are to occur.

The question that arises here with regard to teacher decision making is, do teachers actually think through a lesson in such a neat and orderly way? The plans on which this analysis is based were written plans - the finished product of teachers' thinking. It would be interesting to know whether some teachers begin their thinking by deciding on a central activity, and then develop other activities that lead up to it. To learn more about the sequence of teachers' thinking with regard to sequence of procedures in a lesson, we need to study more than teachers' written plans. What has been demonstrated to date, however, is that most of the teachers in this study conceived of a lesson plan as including a statement of the sequence of procedures to be followed in the lesson.

Table 5

Lesson Planning Task

Specifying a Sequence of Procedures to be Followed

	Reading		Math	
	Sequence	No Sequence	Sequence	No Sequence
Second Grade (N=18)	18	0	17	1
Fifth Grade (N=20)	18	2	18	2

Comparative data. When teacher responses to the Lesson Planning Task are organized according to teacher differences in average pupil gain scores on the Experimental Teaching Units, a few significant differences occur. With regard to the general planning procedures used by teachers, tests of significance were not applied in several instances where analysis of responses resulted in 2 x 3 tables. In these cases the Ns were so small that distribution over six cells resulted in an expected frequency of less than five for all cells. Some of these tables are presented here, however, because the raw data are interesting despite the small Ns.

Fifth grade teachers with high and low pupil gain scores showed little difference in the specificity of their written plans (see Table 6) in either reading or math. But second grade teachers with low pupil gain scores tended to be more vague in their reading plans, while second grade teachers with high pupil gain scores tended to be more detailed in their math plans. Second grade teachers showed little difference in their statements of goals for either reading or math lessons, but fifth grade teachers with high pupil gain scores tended to state behavioral objectives in the reading lesson more frequently than those with low pupil gain scores. (The reading lesson was the one in which behavioral goals were included among the optional objectives to be selected.) Note that fifth grade teachers with high and low pupil gain scores were equally apt to state no goals at all in their lesson plans, and the same is true for second grade teachers, though fewer instances of this occurred.

There was no difference among the four teacher groups in their tendency to select goals from the curriculum materials, restate goals, or develop original goals. It is interesting to note, however, that when original goals were developed, the only teachers to state original behavioral goals were teachers with high pupil gain scores (see Table 6). No tests of

Table 6

Lesson Planning Task

Frequency of Use of Various Planning Procedures Organized by Pupil Gain Scores

Specificity of Written Plans

Reading

Second Grade

	Vague	Specific	Detailed
High Pupil Gain Scores (N=9)	1	6	2
Low Pupil Gain Scores (N=9)	4	4	1

Fifth Grade

	Vague	Specific	Detailed
High Pupil Gain Scores (N=10)	3	5	2
Low Pupil Gain Scores (N=10)	2	4	4

Math

Second Grade

	Vague	Specific	Detailed
High Pupil Gain Scores (N=9)	2	4	3
Low Pupil Gain Scores (N=9)	3	6	0

Fifth Grade

	Vague	Specific	Detailed
High Pupil Gain Scores (N-10)	2	6	2
Low Pupil Gain Scores (N=10)	3	3	4

Table 6 - Continued

Statement of Goals

Reading

Second Grade

	Behavioral	Non-Behavioral	Not Stated
High Pupil Gain Scores (N=9)	3	5	1
Low Pupil Gain Scores (N=9)	4	3	2

Fifth Grade

	Behavioral	Non-Behavioral	Not Stated
High Pupil Gain Scores (N=10)	4	2	4
Low Pupil Gain Scores (N=10)	1	6	3

Math

Second Grade

	Behavioral	Non-Behavioral	Not Stated
High Pupil Gain Scores (N=9)	1	6	2
Low Pupil Gain Scores (N=9)	0	8	1

Fifth Grade

	Behavioral	Non-Behavioral	Not Stated
High Pupil Gain Scores (N=10)	1	5	4
Low Pupil Gain Scores (N=10)	0	8	2

TABLE 6 - Continued

Type of Original Goals Developed

Reading

Second Grade

	Behavioral	Non-Behavioral	No Originals
High Pupil Gain Scores (N=9)	0	2	7
Low Pupil Gain Scores (N=9)	0	0	9

Fifth Grade

	Behavioral	Non-Behavioral	No Originals
High Pupil Gain Scores (N=10)	2	1	7
Low Pupil Gain Scores (N=10)	0	3	7

Math

Second Grade

	Behavioral	Non-Behavioral	No originals
High Pupil Gain Scores (N=9)	1	0	8
Low Pupil Gain Scores (N=9)	0	2	7

Fifth Grade

	Behavioral	Non-Behavioral	No originals
High Pupil Gain Scores (N=10)	1	2	7
Low Pupil Gain SCores (N=10)	0	3	7

TABLE 6 - Continued

Attention to Pupil Background or Preparation

Reading

Second Grade

	Notes Pupil Background	Does Not
High Pupil Gain Scores (N=9)	1	8
Low Pupil Gain Scores (N=9)	0	9

Fifth Grade

	Notes Pupil Background	Does Not
High Pupil Gain Scores (N=10)	4	6
Low Pupil Gain Scores (N=10)	1	9

Math

Second Grade

	Notes Pupil Background	Does Not
High Pupil Gain Scores (N=9)	1	8
Low Pupil Gain Scores (N=9)	2	7

Fifth Grade

	Notes Pupil Background	Does Not
High Pupil Gain Scores (N=10)	3	7
Low Pupil Gain SCores (N=10)	0	10

Table 6 - continued

Notes Possible Alternative Procedures

Reading

Second Grade

	Yes	No
High Pupil Gain Scores (N=9)	1	8
Low Pupil Gain Scores (N=9)	3	6

Fifth Grade

	Yes	No
High Pupil Gain Scores (N=10)	4	6
Low Pupil Gain SCores (N=10)	1	9

Math

Second Grade

	Yes	No
High Pupil Gain Scores (N=9)	3	6
Low Pupil Gain Scores (N=9)	2	7

Fifth Grade

	Yes	No
High Pupil Gain Scores (N=10)	3	7
Low Pupil Gain SCores (N=10)	3	7

significance were applied here because of the small N, but it might be useful to pursue this further with larger number of teachers.

Second grade teachers with high and low pupil gain scores showed no difference in their tendency to note pupil background or preparation for the topic to be covered in their lesson plans for reading or math. Fifth grade teachers with high pupil gain scores, however, did note pupil background more frequently than their counterparts with low pupil gain scores. This difference approached significance for math lesson plans ($p = .11$) and the trend was repeated for reading lesson plans.

Second grade teachers showed no difference in their tendency to note possible alternative procedures in their lesson plans for either reading or math. Fifth grade teachers with high pupil gain scores tended to mention such alternatives more than those with low pupil gain scores, but this difference was not significant, nor was the tendency repeated in the math lesson plans.

There were no differences between teachers with high and low pupil gain scores at either grade level in their indication of procedures to be used in evaluating pupil learning, or in their preference for a particular lesson plan format (outline vs. narrative vs. script).

When the types of statements made by teachers in their lesson plans are examined in light of pupil gain scores, a few differences are noted for second grade teachers (see Table 7). In their math lesson plans, second grade teachers with high pupil gain scores made fewer general statements and more specific statements than did second grade teachers with low pupil gain scores. This difference reached significance ($p < .10$), and the tendency to make more specific statements was repeated in the reading lesson, though

Table 7

Lesson Planning Task

Mean Differences in Various Categories of Statements
Organized by Pupil Gain Scores

	Second Grade			Fifth Grade	
	High Pupil Gain Scores (N=9)	Low Pupil Gain Scores (N=9)		High Pupil Gain Scores (N=10)	Low Pupil Gain Scores (N=10)
No. of General Statements					
Reading Lesson	2.77	2.88		2.50	2.60
Math Lesson	1.33	3.77	*	2.70	2.70
No. of Specific Statements					
Reading Lesson	6.33	4.88		4.70	5.60
Math Lesson	5.88	3.55	*	5.70	5.10
No. of References to Cognitive Aspects					
Reading Lesson	3.44	3.00		3.20	3.40
Math Lesson	3.22	2.44		3.50	3.20
No. of References to Affective Aspects					
Reading Lesson	.33	.22		.10	.30
Math Lesson	.22	.00		.10	.20
No. of References to Pupil Categories					
Reading Lesson	2.88	2.55		2.20	2.00
Math Lesson	2.11	1.88		2.10	1.90
No of References to Process Categories					
Reading Lesson	3.33	2.33	*	2.70	3.20
Math Lesson	3.22	2.22		3.20	3.50

* t - test of significance, $p < .10$, $df = 16$

the difference was not significant. In their reading lesson plans, second grade teachers with high pupil gain scores made more statements referring to categories dealing with instructional process than did those with low pupil gain scores ($p < .10$), and again the trend was repeated in the math lesson plans, though the difference was not significant.

The analysis of teacher responses to the Lesson Planning Task that is of most interest to us is that dealing with specific statements about cognitive aspects of instructional process, because of the findings in the companion study of teacher and pupil perceptions of classroom interaction that pupils attended strongly to certain of these aspects. The category of Data Selection was one which pupils attended to a great deal in observing classroom interaction, and Teacher Explanation and Teacher Directions were also referred to frequently in their retrospective comments about things teachers do to help pupils learn. Teacher Explanation and Teacher Directions received very few specific references in teachers' lesson plans, and there were no significant differences between teachers with high and low pupil gain scores with respect to these categories, although fifth grade teachers with high pupil gain scores did tend to make more statements about teacher explanation in their math lessons than did those with low pupil gain scores. Fifth grade teachers with high and low pupil gain scores showed no differences in their frequency of statements about Data Selection (see Table 8), but second grade teachers with high pupil gain scores made specific statements about Data Selection more frequently than those with low pupil gain scores. This pattern was significant in math lesson plans ($p = .07$) and the pattern was repeated in reading lesson plans.

Table 8

Lesson Planning Task

Frequency of Use of Specific Statements About Cognitive Aspects Organized by Pupil Gain Scores

Data Selection

Reading

Second Grade

	Yes	No
High Pupil Gain Scores (N=9)	5	4
Low Pupil Gain Scores (N=9)	2	7

Fifth Grade

	Yes	No
High Pupil Gain Scores (N=10)	6	4
Low Pupil Gain Scores (N=10)	5	5

Math

Second Grade

	Yes	No
High Pupil Gain Scores (N=9)	5	4
Low Pupil Gain Scores (N=9)	1	8

Fifth Grade

	Yes	No
High Pupil Gain Scores (N-10)	4	6
Low Pupil Gain Scores (N=10)	4	6

Fisher's Exact Test, $p < .10$, $df = 1$.

TABLE 8 - Continued

Teacher Introduction

Reading

Second Grade

	Yes	No
High Pupil Gain Scores (N=9)	4	5
Low Pupil Gain Scores (N=9)	3	6

Fifth Grade

	Yes	No
High Pupil Gain Scores (N=10)	0	10
Low Pupil Gain Scores (N=10)	4	6

Fisher's Exact Test, $p < .05$, $df = 1$.

Math

Second Grade

	Yes	No
High Pupil Gain Scores (N=9)	1	8
Low Pupil Gain Scores (N=9)	1	8

Fifth Grade

	Yes	No
High Pupil Gain Scores N=10)	1	9
Low Pupil Gain Scores (N=10)	4	6

TABLE 8 - Continued

Teacher Questions

Reading

	Second Grade		Fifth Grade	
	Yes	No	Yes	No
High Pupil Gain Scores (N=9)	4	5		
Low Pupil Gain Scores (N=9)	1	8		
High Pupil Gain Scores (N=10)			3	7
Low Pupil Gain Scores (N=10)			2	8

Math

	Second Grade		Fifth Grade	
	Yes	No	Yes	No
High Pupil Gain Scores (N=9)	4	5		
Low Pupil Gain Scores (N=9)	1	8		
High Pupil Gain Scores N=10)			2	8
Low Pupil Gain Scores N=10)			3	7

Table 8 - Continued

Content Focus

Reading

Second Grade

	Yes	No
High Pupil Gain Scores (N=9)	1	8
Low Pupil Gain Scores (N=9)	5	4

Fifth Grade

	Yes	No
High Pupil Gain Scores (N=10)	1	9
Low Pupil Gain Scores (N=10)	3	7

Fisher's Exact Test, $P < .10$, df = 1.

Math

Second Grade

	Yes	No
High Pupil Gain Scores (N=9)	2	7
Low Pupil Gain Scores (N=9)	4	5

Fifth Grade

	Yes	No
High Pupil Gain Scores (N=10)	4	6
Low Pupil Gain Scores (N=10)	1	9

Teachers as a whole made more frequent references to Teacher Introduction and Teacher Questions than they did to Teacher Explanation and Teacher Directions. There were no significant differences for second grade teachers in their tendency to plan specifically for Teacher Introduction (see Table 8), but fifth grade teachers with low pupil gain scores made statements about Teacher Introduction more frequently than did teachers with high pupil gain scores. This pattern was significant for reading lesson plans ($p = .04$) and was repeated for math lesson plans, though it was not significant in that instance. Second grade teachers with high pupil gain scores showed a tendency to make more specific references to Teacher Questions that did their counterparts with low pupil gain scores. This pattern was repeated in both reading and math lesson plans, though it was not significant in either instance.

One rather puzzling finding was that second grade teachers with low pupil gain scores made significantly more specific statements about content focus in their reading lesson plans than did second grade teachers with high pupil gain scores ($p = .07$). The pattern was not repeated for second grade teachers' math lessons, and it was reversed for fifth grade teachers' math lessons, where teachers with high pupil gain scores tended to mention content focus more often than those with low pupil gain scores. This latter difference was not significant.

While teachers as a whole made frequent reference to use of pupil ideas in their lesson plans, and tended to include teacher-prepared worksheets in their plans, there were no significant differences between teachers of high and low pupil gain scores with regard to either of these tendencies. Second grade teachers with high pupil gain scores tended to make fewer

worksheets for the reading lesson than did teachers with low pupil gain scores, but the difference was not significant. This is interesting in light of the recent studies indicating that pupils achieve better in reading when teachers do not use homemade instructional materials (Stallings, 1975; Brophy, 1976). In this instance, of course, there were no "expert-prepared" instructional materials to be given to pupils, which may have increased teachers' tendencies to make such materials themselves.

The Unstated Plans of Teachers

To this point, all of the discussion has focussed on teachers' stated plans for lessons, but one very interesting facet of this study which has not been previously reported, relates to teachers' unstated plans. Not one of the thirty-eight teachers who provided plans for the two special lessons that they taught made any mention of the seating arrangements they would be using. Yet the group of children with whom they were working was a group especially constructed for these lessons, so they could not rely on merely following established seating patterns. The question of interest here was whether or not teachers planned seating arrangements for these lessons, even though they did not state these plans.

As part of the data collection for each lesson, an observer made a seating chart to indicate the placement of children for the lesson. These seating charts have been studied to determine the types and varieties of seating arrangements used, and the post-lesson interviews of teachers have been reviewed to determine whether teachers commented on seating arrangements at this point in time. Eleven of the forty teachers in this study did comment on seating arrangement in one or both of the follow-up interviews, even though there were no specific questions asked by the interviewer about this topic.

Interestingly enough, twice as many teachers commented on seating arrangements while viewing videotapes of other teachers' lessons as when viewing tapes of their own lessons. These facts seem to indicate that many teachers do consider seating arrangements at some point in their planning, even though they may not make statements about this aspect of a lesson when asked to share their plans.

This conclusion is corroborated by a follow-up study currently being conducted under the auspices of the Michigan State University Institute for Research on Teaching. In this instance ten elementary school teachers who are participating in a year-long longitudinal study of their instructional decision making were interviewed about their planning just prior to a regular daily lesson in reading. In response to a general request to "Briefly describe the planning you did for this lesson," only two teachers mentioned seating arrangements as a part of their preliminary planning, and then only briefly, with no detail. However, when probed on this aspect of planning (Is there anything about the seating arrangement you'd like to comment on in relation to planning for this lesson?), all but one teacher had comments to make about the seating arrangement that they had in mind for the lesson, and the arrangements they discussed were very specific.

If we accept these indications as evidence that teachers do consider seating arrangements in planning their lessons, even though this aspect of planning tends to remain unstated, the next questions of interest to consider are:

1. Can teachers be differentiated on the basis of the types of seating arrangements they plan?
2. If so, are these differences related to teacher differences in average pupil gain score?

Descriptive data. The variety of types of seating arrangements used

was not particularly extensive. Patterns of seating were readily identified as circles, semi-circles, rows vertical to the focus of attention, rows horizontal to the focus of attention, and random or scattered seating. Second grade teachers (see Table 9) were split about evenly between rows and semi-circles for reading, but favored circular arrangements for math. Fifth grade teachers showed a strong preference for rows in both math and reading lessons. Random seating occurred to some extent at both grade levels and in both subject areas, though it was least common in fifth grade math lessons.

The variety of physical equipment used was also limited to sitting on the floor, sitting on chairs without desks, sitting at desks, and sitting at tables. The tables were of three varieties: regular classroom tables, tables constructed by placing several desks together, and cafeteria-type tables with attached benches. Some second grade (see Table 10) teachers had children use the floor as a seat in both reading and math lessons. No fifth grade teachers used floor seating. About half of the second grade teachers favored the use of chairs without desks in both reading and math lessons. Half of the fifth grade teachers used tables in both reading and math lessons.

Another way of viewing this grade level difference in use of physical equipment is that fifth grade teachers were much more apt to provide pupils with a writing surface than were second grade teachers (see Table 11). This was true for both reading and math lessons. This is interesting in light of the fact that no such difference existed in teachers' written plans with regard to <u>need</u> for a writing surface. In reading lesson plans, ten second grade and twelve fifth grade teachers indicated that pupils would be writing during the lesson. In math lesson plans, ten second grade and eight fifth grade teachers noted that pupils would be writing. Thus, it seems that several

Table 9

Seating Arrangements

Frequency of Use of Various Formations

	Reading		Math	
	2nd (N=18)	5th (N=20)	2nd (N=18)	5th (N=20)
Circle	1	3	3	2
Semi-circle	6	2	7	3
Vertical Rows	4	7	4	12
Horizontal Rows	3	5	0	2
Random	4	3	4	1

Table 10

Seating Arrangements

Frequency of Use of Physical Equipment

	Reading		Math	
	2nd (N=18)	5th (N=20)	2nd (N=18)	5th (N=20)
Sitting on Floor	3	0	3	0
Sitting on Chairs, No Desks	9	4	8	3
Sitting at Desks	2	6	2	5
Sitting at Tables	4	10	5	12

Table 11

Seating Arrangements

Provision of Writing Surface

Reading

	Second Grade (N=18)	Fifth Grade (N=20)
Surface Provided	6	16
Not Provided	12	4

Math

	Second Grade (N=18)	Fifth Grade (N=20)
Surface Provided	7	15
Not Provided	11	5

fifth grade teachers tended to provide writing surfaces for pupils even when they had no definite plans to use these, while several second grade teachers failed to provide writing surfaces for pupils even though they intended to have pupils do some writing during the lesson.

Another interesting aspect of seating arrangements used by teachers in this study was the centering or focussing of pupil attention that occurred as a result. Four patterns of centering were identified. Seating arrangements centered pupil attention on: a) the teacher; b) the chalkboard; c) the middle of the circle of chairs; or d) the teacher and the chalkboard together. By far the predominant pattern of seating (see Table 12) was to provide a double focus for pupil attention -- that is, centering attention on both the teacher and the chalkboard. This pattern was used heavily by both second and fifth grade teachers for both reading and math lessons.

The seating charts gathered in this study indicate that the variety of seating arrangements is limited, but that there are difinite differences in the patterns of seating preferred by second and fifth grade teachers. Apparently subject matter did not affect the type of seating planned to any great degree.

Comparative data. When data on seating arrangements used in these lessons are organized according to average pupil gain score, some significant differences appear. Table 13 shows seating formations organized by pupil gain scores. No tests of significance have been applied here because of the small Ns, but the tendency seems to be for second grade teachers with high average pupil gain scores to use semi-circles in reading more frequently than their counterparts with low pupil gain scores. The other clear difference is that random or scattered seating was used almost exclusively by teachers with low pupil gain scores.

Table 12

Seating Arrangements

Centering of Attention

	Reading *		Math	
	2nd (N=18)	5th (N=20)	2nd N=18)	5th (N=20)
Teacher Centered	5	4	3	1
Chalkboard Centered	0	0	0	3
Circle-Centered	1	3	1	0
Teacher and Chalkboard: Double Centering	10	12	14	16

* With some seating arrangements in reading it was impossible to identify the focus of attention by the seating chart.

Table 13

Seating Arrangements

Seating Formations Organized by Pupil Gain Scores

Reading

Second Grade

	Circle	Semi-Circle	Vertical Rows	Horizontal Rows	Random
High Pupil Gain Scores (N=9)	1	5	1	1	1
Low Pupil Gain Scores (N=9)	0	1	3	2	3

Fifth Grade

	Circle	Semi-Circle	Vertical Rows	Horizontal Rows	Random
High Pupil Gain Scores (N=10)	1	1	5	3	0
Low Pupil Gain Scores (N=10)	2	1	2	2	3

Math

Second Grade

	Circle	Semi-Circle	Vertical Rows	Horizontal Rows	Random
High Pupil Gain Scores (N=8)	1	4	3	0	0
Low Pupil Gain Scores (N=10)	2	3	1	0	4

Fifth Grade

	Circle	Semi-Circle	Vertical Rows	Horizontal Rows	Random
High Pupil Gain Scores (N=10)	1	1	7	1	0
Low Pupil Gain Scores (N=10)	1	2	5	1	1

When these characteristics are examined separately (see Table 14), one significant difference does appear. Second grade teachers with high pupil gain scores use circular arrangements in reading more often than those with low pupil gain scores ($p < .05$). Fifth grade teachers with high pupil gain scores use random seating in reading lessons less often than those with low pupil gain scores, and this difference approaches significance ($p = .10526$). This trend is repeated for math, and also occurs in both subject areas for second grade teachers with high pupil gain scores.

When use of physical equipment is organized by pupil gain scores (see Table 15) it is apparent that second grade teachers with low pupil gain scores were the only ones to use seating on the floor. This may be a surprising fact to some. An additional fact of importance is that in each of these instances the teacher was standing while the pupils sat on the floor, so there was an extreme difference between eye levels of pupils and teachers. Fifth grade teachers with low pupil gain scores used chairs without desks in both math and reading lessons, but no fifth grade teachers with high pupil gain scores used this arrangement. Second grade teachers with high pupil gain scores used chairs without desks more frequently than did their counterparts with low pupil gain scores.

When use of chairs without desks is examined as a separate characteristic (see Table 16) there are significant differences for both second and fifth grade teachers in reading lessons. These differences are in opposite directions. Second grade teachers with high pupil gain scores use chairs alone more frequently than do second grade teachers with low pupil gain scores ($p < .05$). Fifth grade teachers with high pupil gain scores use this pattern of seating much less frequently than their counterparts with low pupil gain scores ($p < .05$). This is an interesting reversal, and may be related to the

Table 14

Seating Arrangements

Circular and Random Arrangements
organized by pupil gain scores

Circular Seating

Reading

Second Grade

	High Pupil Gain Scores (N=9)	Low Pupil Gain Scores (N=9)
Circular Seating	6	1
Non-circular Seating	3	8

Fifth Grade

	High Pupil Gain Scores (N=10)	Low Pupil Gain Scores (N=10)
Circular Seating	2	3
Non-circular Seating	8	7

Fisher's Exact Test, $p < .05$, df=1

Math

Second Grade

	High Pupil Gain Scores (N=8)	Low Pupil Gain Scores (N=10)
Circular Seating	5	5
Non-circular Seating	3	5

Fifth Grade

	High Pupil Gain Scores (N=10)	Low Pupil Gain Scores (N=10)
Circular Seating	3	1
Non-circular Seating	5	9

Table 14 (continued)

Random Seating

Reading

	Second Grade	
	High Pupil Gain Scores (N=9)	Low Pupil Gain Scores (N=9)
Random Seating	1	3
Not Random	8	6

	Fifth Grade	
	High Pupil Gain Scores (N=10)	Low Pupil Gain Scores (N=10)
Random Seating	0	3
Not Random	10	7

Math

	Second Grade	
	High Pupil Gain Scores (N=8)	Low Pupil Gain Scores (N=10)
Random Seating	0	4
Not Random	8	6

	Fifth Grade	
	High Pupil Gain Scores (N=10)	Low Pupil Gain Scores (N=10)
Random Seating	0	1
Not Random	10	9

Table 15

Seating Arrangements

Physical Equipment Organized by Pupil Gain Scores

Reading

Second Grade

	Floor	Chairs Only	Desks	Tables
High Pupil Gain Scores (N=9)	0	7	1	1
Low Pupil Gain Scores (N=9)	3	2	1	3

Fifth Grade

	Floor	Chairs Only	Desks	Tables
High Pupil Gain Scores (N=10)	0	0	3	7
Low Pupil Gain Scores (N=10)	0	4	3	3

Math

Second Grade

	Floor	Chairs Only	Desks	Tables
High Pupil Gain Scores (N=8)	0	4	2	2
Low Pupil Gain Scores (N=10)	3	4	0	3

Fifth Grade

	Floor	Chairs Only	Desks	Tables
High Pupil Gain Scores (N=10)	0	0	3	7
Low Pupil Gain Scores (N=10)	0	3	2	5

Table 16

Seating Arrangement

Use of Chairs Alone
organized by pupil gain score

Reading

Second Grade

	High Pupil Gain Scores (N=9)	Low Pupil Gain Scores (N=9)
Chairs Alone	7	2
Other Equipment	2	7

Fisher's Exact Test, $p < .05$, df=1

Fifth Grade

	High Pupil Gain Scores (N=10)	Low Pupil Gain Scores (N=10)
Chairs Alone	0	4
Other Equipment	10	6

Fisher's Exact Test, $p < .05$, df=1

Math

Second Grade

	High Pupil Gain Scores (N=8)	Low Pupil Gain Scores (N=10)
Chairs Alone	4	4
Other Equipment	4	6

Fifth Grade

	High Pupil Gain Scores (N=10)	Low Pupil Gain Scores (N=10)
Chairs Alone	0	3
Other Equipment	10	7

apparent importance of the provision of writing surfaces at the fifth grade level.

When the provision of writing surface for pupils is organized by average pupil gain scores (see Table 17), another difference between second and fifth grade teachers is apparent. Second grade teachers of high and low pupil gain scores differ very little in their tendency to provide writing surfaces for pupils, but fifth grade teachers differ markedly. Fifth grade teachers with high pupil gain scores always provided writing surfaces for their pupils, while several fifth grade teachers with low pupil gain scores did not provide them in either reading or math lessons. This was a significant difference for fifth grade teachers ($p < .05$).

When centering of attention is organized according to pupil gain scores, (see Table 18) it is evident that teachers with high pupil gain scores use a double-centered arrangement, with pupil attention focussed on both the teacher and the chalkboard, more frequently than teachers with low pupil gain scores. This trend is repeated for both grade levels and both subject areas, but it is most apparent in math lessons. Fifth grade teachers with high pupil gain scores are significantly different than their counterparts with low pupil gain scores in their use of double centering in math lessons ($p < .05$).

One way of interpreting these findings is to examine more closely a subset of teachers - the nine teachers who were personally observed and interviewed by the author. Of these nine teachers, five were teachers with low pupil gain scores (two second and three fifth grade teachers) and four were teachers with high pupil gain scores (one second and three fifth grade teachers). The one characteristic that stood out during observations of the teachers with low pupil gain scores (notes were made during the observations and long before the observer had any information on which teachers had high

Table 17

Seating Arrangements

Provision of Writing Surfaces
organized by pupil gain scores

Reading

Second Grade

	High Pupil Gain Scores (N=9)	Low Pupil Gain Scores (N=9)
Writing Surface Provided	2	4
Not Provided	7	5

Fifth Grade

	High Pupil Gain Scores (N=10)	Low Pupil Gain Scores (N=10)
Writing Surface Provided	10	6
Not Provided	0	4

Fisher's Exact Test, $p < .05$, df=1

Math

Second Grade

	High Pupil Gain Scores (N=8)	Low Pupil Gain Scores (N=10)
Writing Surface Provided	4	3
Not Provided	4	7

Fifth Grade

	High Pupil Gain Scores (N=10)	Low Pupil Gain Scores (N=10)
Writing Surface Provided	10	6
Not Provided	0	4

Fisher's Exact Test, $p < .05$, df=1

Table 18

Seating Arrangement

Centering of Attention on Both Teacher and Chalkboard organization by pupil gain scores

Reading

	Second Grade		Fifth Grade	
	High Pupil Gain Scores (N=8)	Low Pupil Gain Scores (N=7)	High Pupil Gain Scores (N=9)	Low Pupil Gain Scores (N=10)
Double Centered	5	5	6	6
Single Centered	3	2	3	4

Math

	Second Grade		Fifth Grade	
	High Pupil Gain Scores (N=8)	Low Pupil Gain Scores (N=10)	High Pupil Gain Scores (N=10)	Low Pupil Gain Scores (N=10)
Double Centered	7	7	10	6
Single Centered	1	3	0	4

Fisher's Exact Test, $p < .05$, df=1

or low pupil gain scores) was the apparent lack of awareness these teachers had of the pupils' physical placement, both with regard to comfort and appropriateness for the instructional procedures to be used. The two second grade teachers, for example, stood at the blackboard while their pupils sat below them on the floor, heads turned up and necks at a severe backward angle for fifteen or twenty minutes. One fifth grade teacher had his twelve students stay at their regularly assigned seats, so that he worked in both lessons with a small group who were scattered all over the classroom, making discussion among pupils much more difficult than necessary. Another fifth grade teacher taught his reading lesson in a small, spare room with no desks. He wanted pupils to write sentences, but they had nothing to write on, so he took some small textbooks from a shelf for them to use as writing surfaces. The same teacher taught his math lesson in the cafeteria, using two tables and benches, facing an overhead projector and screen. One row of pupils sat on a bench facing the table. The other row sat on a bench with their backs to the table. (Anyone who has tried this knows that the table cuts into the small of the back.) The third fifth grade teacher taught her math lesson in an all-purpose room, also using cafeteria-style tables and benches, with an overhead projector. She sat on one bench with her back to half of the group of children, so that when they raised their hands to answer her questions, they were unable to get her attention.

All of these five teachers demonstrated a lack of awareness of the inappropriateness of their seating arrangements for the pupils and lessons they were teaching. It may be that the significant differences among teachers with high and low pupil gain scores noted in Tables 15 and 16, and the trends noted in Tables 13 and 14, can be better understood from this light. Random seating patterns, having children sit on the floor while teachers stand above

them, failing to provide writing surfaces for pupils, and centering attention on one rather than two important sources of information (teacher and chalkboard) are some of the characteristics displayed by the teachers in this study with low pupil gain scores. All of these could be considered as examples of lack of attention to physical arrangements conducive to comfort and learning.

Summary of Results

Descriptive data derived from this study indicate that teachers varied in the specificity, format, and types of information included in their written plans. Behavioral goals were used very rarely. Several teachers neglected to include any goal statements in their plans. Very little mention was made of diagnosis of pupil needs or of procedures to evaluate learning resulting from the lesson. Teachers made more specific than general statements in their plans, and referred frequently to cognitive aspects of the lesson. Data Selection, a teaching behavior noticed frequently by pupils, was referred to specifically in two out of five plans, while Use of Pupil Ideas was referred to in three out of five plans. Most teachers developed worksheets for use by students during the lesson. Almost all specified a sequence of procedures to be followed in the lesson.

None of the teachers mentioned seating arrangements in their written plans, although observation of the lessons indicated that many of them had specific arrangements in mind for lesson. The preferred seating arrangements for fifth grade teachers were vertical or horizontal rows for reading, and vertical rows for math. Second grade teachers used circular arrangements as often as they did rows in reading lessons, but used circles and semi-circles more than twice as often as rows in math lessons. Fifth grade teachers used tables or desks pushed together to form table arrangements much more often

than second grade teachers. In both math and reading lessons for both fifth and second grade teachers, most seating was arranged to center attention on the teacher and the chalkboard.

Comparative data derived from the study indicate some significant differences between teachers with high and low pupil gain scores. Second grade teachers with high pupil gain scores made significantly fewer general statements, more specific statements, and more statements about instructional process than did their counterparts with low pupil gain scores. They also made significantly more specific statements about Data Selection, and fewer specific statements about Content Focus of the lesson. Fifth grade teachers with high pupil gain scores tended to state behavioral objectives for the reading lesson more frequently than those with low pupil gain scores. The only teachers to develop original behavioral objectives were teachers with high pupil gain scores, but the incidence of this behavior was extremely low.

Comparative data on seating arrangements, which have not been reported on before, also indicate some significant differences between teachers with high and low pupil gain scores. Fifth grade teachers with high average pupil gain scores provided writing surfaces for pupils in both their reading and math lessons significantly more frequently than fifth grade teachers with low average pupil gain scores. Fifth grade teachers with high pupil gain socres provided seating arrangements that centered on both the teacher and chalkboard in their math lessons significantly more often than those with low pupil gain scores. This difference was not apparent in reading lessons. Teachers with low pupil gain scores tended to provide less comfortable and appropriate seating arrangements for their pupils than did those with high pupil gain scores.

Variables for Further Study

Two variables for further study were originally identified as a result of this study of teachers' daily lesson planning, and both were corroborated by significant differences in other aspects of the teacher planning study and the companion study on teacher-pupil perceptions of classroom interaction. These variables are thinking in generalities and attention to cognitive aspects of the lesson. Teachers with low pupil gain scores showed a greater tendency to think in generalities, while teachers with high pupil gain scores showed a greater attention to cognitive aspects of lessons.

The additional analysis of data on teachers' unstated plans, presented in this paper, suggests that a third variable for further study might well be teachers' attention to physical arrangements of pupils. Teachers with low pupil gain scores showed some lack of attention to this area of lesson planning.

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